

Docket No.: NHL-DOR-103
Serial No.: 10/051,620
Customer No.: 00432

REMARKS

The Office Action dated January 22, 2004, has been reviewed in detail and the application has been amended in the sincere effort to place the same in condition for allowance. Reconsideration of the application and allowance in its amended form are requested based on the following remarks.

Applicants retain the right to pursue broader claims under 35 U.S.C. §120.

Applicants have provided a unique solution with respect to problems regarding A MOVABLE WALL SYSTEM HAVING A PLURALITY OF MOVABLE PANELS, A RUNNER RAIL, AND A TRACK-SWITCHING ARRANGEMENT. Applicants' solution is now claimed in a manner that satisfies the requirements of 35 U.S.C. §§103 and 112.

Rejection of Claims 1-10 Under 35 U.S.C. §103:

Claims 1-10 were rejected under 35 U.S.C. §103 as being unpatentable over German Patent Publication No. 1 957 004 (herein after German German '004) in view of German Patent Publication No. 40 15 870 (herein after German '870).

The Examiner states in the outstanding Office Action that it would have been obvious to a person of ordinary skill in the art at

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the time the invention was made to provide German '004 with a sole running surface as taught by German '870 in order to reduce the amount of friction created as the panels move along the tracks.

In that regard, the Examiner does not point out any passage in the German '004 reference which would indicate the desirability of adopting the sole running surface of German '870 in the movable wall system of German '004. Likewise, the Examiner also does not point out any passage in the German '870 reference which would indicate the desirability, or the utility, of using the sole running surface in a movable wall system with a circular junction as shown in German '004. In this regard, it is important to note the decision of the Court of Appeals, Federal Circuit (CAFC) in its opinion in In re Howard Sernaker, 702 F. 2d 989, wherein, a Patent and Trademark Board of Appeal affirmance of an Examiner's rejection under 35 U.S.C. §103, based on a combination of references, was overturned.

In Sernaker, the invention involved related to a method for producing embroidered "emblems" which closely resembled emblems of the prior art embroidered with different colored thread. In the claims on appeal, a sculptured embroidery was produced from a single colored thread (e.g., white); a heat-transferable transfer print (e.g., a

decal) was provided; the sculptured embroidery and the transfer print were mated and aligned; and color was transferred from the print to the embroidery by the application of heat.

Sculptured one-color embroideries were known in the prior art, as was the heat transferable printing process. However, the CAFC held the claims on appeal nonobvious, stating the relevant tests to be:

"(a) whether a combination of the teachings of all or any of the references would have suggested (expressly or by implication) the possibility of achieving further improvement by combining such teachings along the line of the invention in suit, and

(b) whether the claimed invention achieved more than a combination which any or all of the prior art references suggested, expressly or by reasonable combination."

The CAFC recognized that the separate elements of the white sculptured embroidery and the heat-transferable dyeing process existed in the prior art. However, they pointed to the absence, in the references themselves or in the prior art general knowledge as a whole, of any recognition or suggestion that further improvements could be achieved by combining these known elements in the manner taught and claimed in the application (e.g., in a mated and aligned fashion). A copy of the opinion in Sernaker is enclosed for the convenience of the Examiner.

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It is believed that the decision of Sernaker is applicable in the present application, as there is nothing in either of the two references which teaches or suggests that the references be combined.

Further, since there is nothing in the applied references to teach that they be combined, it is also submitted that the only motivation to combine the applied references is the present disclosure itself, and such hindsight analysis of the available art is considered improper. At this juncture, Applicants wish to point out the decision in another court case which is considered to be relevant to the prosecution of the instant application.

In In re Deminski, 230 USPQ 313 (1986), the CAFC overturned a decision of the Board of Patent Appeals and Interferences regarding obviousness of the invention in view of prior references. In In re Deminski, the Board upheld the Examiner's rejection of Claims 17, 18 and 21 in view of obviousness over the prior art. These claims have the limitation that the valve sets in the valve chambers be connected to permit withdrawal as a unit. The Board argued that if the Pocock reference would have attached the valve stem to the valve structure, the valve assembly would have been removable as a unit. The CAFC found nothing in the references to "suggest the desirability, and thus

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the obviousness" of designing the valve assembly to be removable, and stated that "the only way the board could have arrived at its conclusion was through hindsight analysis by reading into the art Deminski's own teachings. Hindsight analysis is clearly improper, since the statutory test is whether the subject matter as a whole would have been obvious at the time the invention was made." A copy of the opinion in Deminski is enclosed for the convenience of the Examiner.

In view of the above decision in In re Deminski, it is submitted that, only upon a reading of the specification of the present application that one would have possibly been motivated to provide the movable wall system of German '004 with a sole running surface of German '870.

Further, even if, for the sake of argument purposes only, the German '004 and German '870 references could somehow be combined, it would appear that significant portions of the German '004 device would have to be destroyed, or at least compromised in order to combine the references as suggested by the Examiner. German '870 shows a solid, tubular, runner rail structure 12 that is designed to support carrier wheels 19 with concave running surfaces that are

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complementary to the tubular structure of the rails 12. Therefore, in order for these sole running surfaces 12 to be incorporated into the system of German '004, the carrier wheels of German '004 would have to be replaced with the concave wheels of German '870. Further, the sole running surface of German '870 were incorporated, one of the wheels in each pair of wheels in German '004 would become superfluous and would likely be removed. Such a drastic change would undoubtedly affect the stability of each panel as only one wheel would be supporting the panel. This loss of stability would have to be compensated for by further changes to the design of the wheels and support structure. In this regard, it is respectfully submitted that it is extremely unclear as to how the sole running surface of German '870 could be incorporated in the movable wall system of German '004.

In view of the above, it is respectfully submitted that one of the basic requirements of a *prima facie* case for obviousness as set forth in MPEP 2143, specifically that there be a suggestion to modify or combine the references, has not been satisfied. In view of the above, reconsideration and withdrawal of the present rejection are respectfully requested.

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Claim 1 has been canceled herein, without prejudice, thereby rendering the rejection against this claim moot.

In view of the above, Claims 2-10 and new Claims 21-32 are believed to be in condition for allowance.

Rejection of Claims 1-10 Under 35 U.S.C. §112, Second

Paragraph:

Claims 1-10 were rejected under 35 U.S.C. §112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. Claim 1 has been canceled herein, without prejudice, thereby rendering the rejection against this claim moot. Claims 2-10 have been amended herein in a manner believed to overcome the rejection.

Objection to the Specification:

The abstract and title were objected to by the Examiner for the reasons set forth on page 3 of the Office Action. A new abstract and title are submitted herewith. The Examiner also requested that the subject matter from line 1, page 21, to line 6, page 26, be deleted as being superfluous and unnecessary, which deletion is set forth herein above.

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Objection to the Claims:

Claim 1 was objected to for grammatical errors. Claim 1 has been canceled herein, without prejudice, thereby rendering the present objection moot.

Art Made of Record:

The prior art made of record and not applied has been carefully reviewed, and it is submitted that it does not, either taken singly or in any reasonable combination with the other prior art of record, defeat the patentability of the present invention or render the present invention obvious. Further, Applicants are in agreement with the Examiner that the prior art made of record and not applied does not appear to be material to the patentability of the claims currently pending in this application.

In view of the above, it is respectfully submitted that this application is in condition for allowance, and early action towards that end is respectfully requested.

Leave to Delay Treatment of Formal Objections Until Allowable

Subject Matter is Indicated:

In accordance with 37 C.F.R. §1.111, it is hereby respectfully requested that any objections or requirements not fully treated and

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set forth in the outstanding Office action that relate to form and are not necessary to further consideration of the now pending claims, be held in abeyance until allowable subject matter is indicated.

Summary and Conclusion:

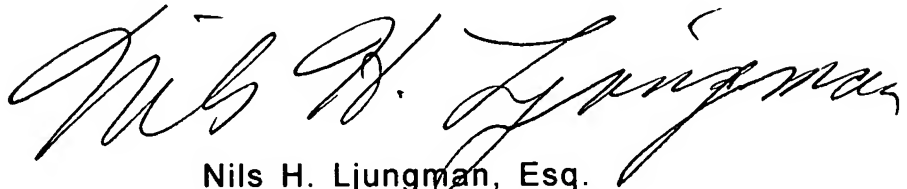
It is submitted that Applicants have provided a new and unique A MOVABLE WALL SYSTEM HAVING A PLURALITY OF MOVABLE PANELS, A RUNNER RAIL, AND A TRACK-SWITCHING ARRANGEMENT. It is submitted that the claims, as amended, are fully distinguishable from the prior art. Therefore, it is requested that a Notice of Allowance be issued at an early date.

If mailed, I, the person signing this certification below, hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P. O. Box 1450, Alexandria, VA 22313-1450, on the date indicated in the certification of mailing on the transmittal letter sent herewith, or if facsimile transmitted, I, the person signing this certification below, hereby certify that this paper is being facsimile transmitted to the United States Patent and Trademark Office on the date indicated in the certification of facsimile transmission on the transmittal letter which is

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being facsimile transmitted herewith.

Respectfully submitted,

A handwritten signature in cursive script, reading "Nils H. Ljungman".

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ABSTRACT OF THE DISCLOSURE

Movable wall system having a plurality of panels, each of which is mounted and supported on a runner rail by at least one suspension device. Each suspension device has a runner roller to move and support each panel on the runner rail. Each suspension device also has a guide roller to guide and hold the suspension device and runner roller on the runner rail in the direction of movement. The runner rail has at least one junction at which the suspension device of each panel is steered in a predetermined manner along a desired path of travel on the running surface. The guide roller actuates a junction in the form of a switchable switch which has a pivoting running surface for the carrier roller.

Court of Appeals, Federal Circuit

In re Sernaker

No. 82-579

Decided Feb. 28, 1983

PATENTS

1. Claims — Dependent (§20.35)

Dependent claims, patentability of which were not argued separately, stand or fall with independent claims.

2. Patentability — Anticipation — Combining references (§51.905)

Assuming that all prior art references are sufficiently related to one another and to related and common art that hypothetical person skilled in art must be presumed to be familiar with all of them, next questions as to whether Board of Appeals correctly deduced obviousness from prior art are whether combination of teachings of all or any of references would have suggested, expressly or by implication, possibility of achieving further improvement by combining such teachings along line of invention in suit, and whether claimed invention achieved more than combination that any or all of prior art references

suggested, expressly or by reasonable implication.

3. Court of Appeals for the Federal Circuit — Pleading and practice (§26.57)

CCPA cases reviewing decisions of Board of Appeals under Section 103 are binding precedents in CAFC, as much as CAFC's cases will be; none can be treated as discredited merely because expressions in them can be taken out of their context and construed as in conflict with expressions in other cases.

4. Patentability — Anticipation — Modifying references (§51.217)

Patentability — Evidence of — Suggestions of prior art (§51.469)

It is not necessary that prior art suggest expressly or in so many words changes or possible improvements inventor made; it is only necessary that he apply knowledge clearly present in prior art.

5. Patentability — Anticipation — Combining references (§51.905)

Lesson of In re Imperator, 179 USPQ 730, is that prior art references in combination do not make invention obvious unless something in prior art references would suggest advan-

age to be derived from combining their teachings.

6. Patentability — Evidence of — In general (§51.451)

Secondary considerations that Supreme Court stated might be of possible utility in obviousness determination, *Graham v. John Deere Co.*, 148 USPQ 466-7, require nonobviousness finding if matter is otherwise doubtful.

7. Board of Appeals — Issues determined (§19.30)

Patentability — Evidence of — In general (§51.451)

Board of Appeals must always consider, in connection with obviousness determination, evidence relating to secondary considerations that applicant properly presented.

8. Patentability — Evidence of — Commercial success — Causes (§51.4555)

Fact that prior art references relied on had not been available to inventor very long and things were moving fast in that industry might justify thought that want filled by invention had not been felt very long, but it does not wholly justify ignoring secondary considerations that speak with unusual eloquence.

9. Affidavits — Distinguishing from references (§12.7)

Patent Rule 116(b) allows examiner to admit affidavit that attests to uniqueness of invention after his final action upon showing of good cause.

10. Affidavits — In general (§12.1)

Board of Appeals — Procedure and practice (§19.45)

Pleading and practice in Patent Office — Rules effect (§54.9)

Under Patent Rule 195, Board of Appeals has power to admit affidavit attesting that invention has met with great commercial success, helped revitalize depressed industry, and introduced new item into marketplace not previously presented upon showing of good cause.

11. Patentability — Evidence of — Commercial success — In general (§51.4551)

Notion that Board of Appeals' bare compliment of appellants' device as "extremely attractive" implies assignment of weight to appellants' commercial success evidence is rejected, since to accept this notion would shrink meaning of phrase "secondary considerations" beyond belief.

Particular patents — Emblem Sernaker, Embroidered Transfer and Method of Making, rejection of claims reversed.

Appeal from Patent and Trademark Office Board of Appeals.

Application for patent of Howard Sernaker, Serial No. 916,018, filed June 15, 1978. From decision rejecting claims 1-6 and 8-11, applicant appeals. Reversed; Davis, Circuit Judge, concurring in part and concurring in the result, with opinion.

Michael F. Petock, Philadelphia, Pa., for appellant.

Fred W. Sherling (Joseph F. Nakamura, on the brief) for Patent and Trademark Office.

Before Davis, Circuit Judge, Cowen, Senior Circuit Judge, and Nichols, Circuit Judge.

Nichols, Circuit Judge.

This case is before us on appeal from the decision of the Patent and Trademark Office Board of Appeals (board). In a 2-1 decision, the board affirmed the examiner's rejection, under 35 U.S.C. § 103, of claims 1-6 and 8-11 in appellant's application serial No. 916,018, filed June 15, 1978, entitled "Embroidered Transfer and Method of Marking." These claims comprise all the claims in the case. We reverse.

I.

Background

A. The Invention

Appellant has invented a type of embroidered emblem and a method of making the same. Claims 1 and 10, the only independent claims in appellant's application, are representative of the method and of the emblem, respectively:

1. A method of making an embroidered transfer or emblem comprising the steps of:

(a) embroidering a pattern on a portion of a substrate while using thread free from oil and with said thread being of a single color and in an amount so that a portion of the pattern is sculptured by having a greater thickness than another portion of the pattern,

(b) separating the pattern and its associated substrate portion from the remainder of the substrate,

(c) providing a transfer print on paper with a dyestuff of at least two different colors and capable of subliming under heat and pressure or vacuum,

(d) registering portions of the print with mating portion of said pattern,

(e) transferring color from said print as a gas to the warp side of the pattern while applying sufficient heat to sublime said dyestuff.

10. An embroidered transfer emblem comprising an embroidered pattern on one side of a substrate whose size corresponds to the size of the pattern with thread of a single color which is free of needle oil, portions of the pattern having a sculptured effect by an increased number of thread stitches, at least two colors of dyestuff printed on the thread stitches defining said portions and on other portions of the pattern, said colors being in registry with said sculptured portions of said pattern with at least one of said printed portions including printing outlining a configuration on a portion of said pattern, and said colors being printed on the warp side of said pattern.

[1] The remaining claims are either dependent on method claim 1 (claim 2-6) or on article claim 10 (claims 8, 9 and 11). For example, claim 2 defines a method in accordance with claim 1 of "applying a thermoplastic adhesive to the shuttle side of the thusly printed pattern." Since neither of the parties argues separately the patentability of each of the rejected claims, the dependent claims will stand or fall with independent claims 1 and 10. *In re Burckel*, 592 F.2d 1175, 1178-79, 201 USPQ 67, 70 (CCPA 1979).

The claim language includes several key phrases that we should define at the outset. When the inventor uses "registering" and "in registry," he appears by the context to mean placing or placed in correspondence. A "substrate" literally means a basis on which an organism lives, as a plant on the soil. Another common definition of the term in scientific circles is any solid surface on which a coating or layer of different material is deposited. Under both definitions, application to an embroidery is an understandable analogy.

The record includes samples of the "emblems" made by the claimed method, as completed, and in intermediate stages. As completed, the "emblems" are justly characterized by the board as "extremely attractive." They are apparently badges affixed to garments to convey messages about the loyalties, affiliations, tastes, and preferences of the wearer. Would that we judges had something of the sort to brighten up our robes!

The emblem produced by appellant's method resembles an emblem initially embroidered with different colored threads. Appellant's method, however, circumvents the need to embroider the desired pattern with these different colored threads. Rather, a manufacturer following appellant's method first embroiders the pattern with thread of one color on a substrate, separates the embroidery and its associated substrate from the rest of the substrate, and then essentially dyes the threads different colors by use of a transfer print. Such a transfer print consists of two or more dyestuffs on a piece of paper arranged in a pattern mirroring in shape or "mating" the pattern of the embroidery. By placing the transfer print over the embroidery so that the dyestuffs face the embroidery and match its pattern, and then by applying heat and pressure or vacuum conditions, the dyestuffs on the paper will sublime and then adhere to the matching portion of the embroidery.

Before appellant's invention, a manufacturer would use the Shiffli embroidery machine alone to mass produce embroidery. This large machine, however, cannot stitch thread of more than one color at a time. Thus, to create multicolored patterns, the machine would be shut down after each separate color had been embroidered so its 684 needles could be rethreaded with the next color thread. Since each rethreading procedure takes about 45 minutes, the number of different colors that were commercially feasible to use in a single emblem was limited. With appellant's invented method, on the other hand, a manufacturer can produce an emblem of many colors because he needs not rethread the machine anew for each desired color. Instead, only one color (usually white) is used for the entire embroidered pattern, and then the pattern is dyed different colors with one multicolored transfer print.

B. The References

The references relied upon by the board are:

Haigh	3,657,060	April 18, 1972
Cox	3,974,010	August 10, 1976
Sernaker	4,092,451	May 30, 1978
British patent	1,243,223	August 18, 1971

Miles, L.W.C., *Journal of the Society of Dyers and Colorists*, May 1977, pages 161-163.

Vellins, *British Knitting Industry*, Vol. 46, No. 524, January 1973, pages 45, 46, 48, 50, 53, 55, 57, 59, 63, 65, 67, and 69.

The Butterick Fabric Handbook, Published by Butterick Publishing, A Division

of American Can Company, New York, New York, 1975, pages 99, 100, 119-121, and 142.

The British patent discloses a process of transfer printing on all types of textile articles regardless of their fibers, and a like process of printing on a variety of non-textile articles. With respect to transfer printing on textile articles, the British patent recites a general line of materials to which the process may be applied:

"... [F]leece or webs of non-woven fibers, textile threads, woven webs, knitted material, lace, spongy material in sheet form or already shaped, or even made up articles of clothing.

[British, page 1, lines 66-72.]

The British patent does not specifically mention embroidery as an article susceptible to transfer printing. This patent does, however, teach that a multicolored design may be transferred to textile articles, generally, from a transfer print:

"... [S]everal dyes of different colours can be applied on the same support [of the transfer print], these dyes being either intimately mixed or distributed in order to form the designs which are to be transferred to the textile articles.

[British, page 2, lines 44-48, emphasis supplied.]

The Miles reference teaches that transfer printing can be done on a variety of substrates, such as substrates of polyester and of carpet tile. Miles specifically states that when transferring designs from a paper transfer print to fiber, perfect contact is not necessary because of the vapor state of the dye when it transfers. Although Miles exhibits an awareness of embroidery procedures, he does so in the context of describing the transfer of embroidered patterns onto nonembroidered surfaces; Miles does not teach transfer printing on embroidery itself. Vellins not only teaches transfer printing on a variety of textile substrates (including carpet), but also teaches the deleterious effects of transfer printing on a polyester substrate that contains lubricating oil and other such substances.

The remainder of the references concern various embroidery techniques and methods of producing embroidered emblems, rather than teachings about transfer printing. Butterick reveals that white-on-white embroidery, such as embroidery decoration on a white tablecloth, is commonly made. Butterick also teaches that designs formed in lace can be outlined with embroidery stitching; Butterick defines this entire piece of lace as "re-embroidered lace."

The Haigh patent discloses an embroidered emblem comprised of an embroidered design

stitched onto a woven fabric backing material with an embroidered border, and a thermoplastic adhesive bonded to the other side of the backing material.

The Cox patent discloses a method of preparing articles of "acized" embroidery whereby a design is embroidered directly onto a backing of thermoplastic material, the design and backing are ironed onto a transfer strip, and then the transfer strip is removed taking with it all parts of the backing not in contact with the embroidery. Embroidery is "acized" when heat is used to remove the portions of a backing not in contact with embroidery stitches, so that the embroidered design is left hanging together like lace. The portions of the thermoplastic backing that remain in contact with the embroidery become absorbed or melted into the embroidery as a result of the ironing and serve to improve the bonding of the embroidery stitches and to give the embroidery more body. This improved bonding eliminates the need for underlay and interlock stitches, which would otherwise provide such additional bonding.

The Sernaker patent, issued to appellant in this case, discloses an embroidered transfer wherein a pattern is embroidered onto one side of a diaphanous material with the Schiffli machine, and a layer of adhesive is applied to the other side of this material. When this transfer is ironed onto a base fabric, the diaphanous material melts into the fabric and disappears from view; the transfer thus assumes the appearance of a pattern that is directly embroidered onto the base fabric.

C. The Rejection

The board affirmed the examiner's rejection of claims 1, 4-6, and 9-11¹ under 35 U.S.C. § 103 as obvious in view of British taken with Miles, Vellins, and Butterick. The board also affirmed the rejection of claims 2, 3, and 8 for the same reasons and further in view of Cox or Haigh and Sernaker. The board took the position that appellant's invention in essence consisted of two known elements or procedures: (1) the transfer printing of multi-colored designs from a paper strip onto various types of substrates, including

¹In Part II, 4 of the examiner's final rejection dated December 3, 1979, the examiner rejected appellant's claims 1-6, and 8-11. In the portion of this letter articulating the reasons for the rejection (Pt. II, 12), however, the examiner inadvertently omitted claim 11 from his discussion of the group of claims to which it belonged. The omission was a typographical error. The board corrected this error when it discussed the examiner's rejection of claims 1, 4-6, and 9-11.

fabrics, and (2) the making of embroidered transfers or emblems by stitching a pattern of different colored threads onto a substrate.

After noting that appellant had admitted that both of these elements were known in the prior art, the board characterized the manner in which appellant combined them to make a novel article in the following way: "A substrate is stitched with a single colored or white thread and then dyed in the form of a design by transfer printing." Transcript at 75. In the subsequent analysis of the cited references, the board treated various aspects of the appellant's claims as either taught by the references concerning transfer printing or those concerning emblem-making. The board thus reduced the appeal to the question "whether it would have been obvious for one skilled in this art, having these references available, to use the dye transfer process for coloring embroidered emblems." Transcript at 75. The board answered affirmatively, stating:

After reviewing the references, we come to the conclusion that the dye transfer process has been taught to be usable for almost any type of substrate, from relatively smooth fabrics to materials, such as carpets, which are rough in texture and even to aluminum substrates. The formation of embroidered fabrics is known and, as is taught by Butterick, white-on-white embroidery is commonly made. We believe that one skilled in this art would readily understand that the dye transfer process, as described in these references, and which is acknowledged to be old by appellant, may be used to transfer dye in the form of a pattern to any substrate, whether smooth or rough.

While we find the embroidered emblems extremely attractive, we believe that the process would have been obvious in view of the cited art and that only the expected additive results are obtained. Also, we must not lose sight of the fact that the claims are generic in nature and are not limited to the specific exhibits presented in this case. We must compare the claims with the methods and articles described in the references. When we do so, we come to the conclusion that the claimed process and resulting article would have been obvious to one skilled in this art.

[Transcript at 75-76.]

II.

Opinion

A. Whether the board correctly deduced obviousness from the prior art.

[2] We may assume, for purposes of this decision, that all the prior art references in this case are sufficiently related to one another and to a related and common art, that the hypothetical person skilled in the art must be presumed to be familiar with all of them. That being so, the next questions are (a) whether a combination of the teachings of all or any of the references would have suggested (expressly or by implication) the possibility of achieving further improvement by combining such teachings along the line of the invention in suit, and (b) whether the claimed invention achieved more than a combination which any or all of the prior art references suggested, expressly or by reasonable implication. These manifestly related tests are indicated as appropriate by the following decisions of the former Court of Customs and Patent Appeals reviewing, as we do here, decisions of the board denying patentability under § 103 on obviousness grounds.

Cases reversing the board and holding the invention patentable —

In re Rinchart, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976).

In re Imperato, 486 F.2d 585, 179 USPQ 730 (CCPA 1973).

In re Adams, 356 F.2d 998, 148 USPQ 742 (CCPA 1966).

[3] Cases affirming the board and holding the invention unpatentable for obviousness —

In re McLaughlin, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

In re Conrad, 439 F.2d 201, 169 USPQ 170 (CCPA 1971).

In re Sheckler, 438 F.2d 999, 168 USPQ 716 (CCPA 1971).

And there are many others. All these cases are binding precedents in this tribunal, as much as our own will be. *South Corp. v. United States*, 690 F.2d 1368, 215 USPQ 657 (Fed. Cir. 1982). None can be treated as discredited merely because expressions in them can be taken out of their context and construed as in conflict with expressions in other cases. Some minds will prefer the results of the first trio, others of the second. The tests stated above, (a) and (b), were the tests applied in all six cases.

The board majority misdescribed the invention by confusing the embroidery with the substrate and in supposing the inventor just applied a print to a rough substrate instead of a smooth one. It compared the invention with the prior art on the basis of the elements employed being print and substrate. Actually, by both claim 1 and claim 10, there are three component elements. The embroidery is introduced between the print and the substrate. No print is applied to the substrate. It is all

applied to the embroidery. The pattern, being "sculptured," intercepts the colors in the print according to the designer's intentions. The print and the pattern (embroidery) are made to "register" (claim 1 and 10 both use this word), i.e., conform. They "mate."

Certainly the board pointed to no prior art that separately suggested expressly or by implication a three-element combination made up in this way. British in general teaches transfer prints on the substrate, as do Miles and Vellins. The remainder do not teach at all about transfer printing. When one skilled in the art at the time of the invention is considering all the prior art in combination, we wholly fail to perceive what more he would have found. The most that would have appeared to have been suggested was the use of transfer prints on rough substrates by which, no doubt, a variety of designs might have been achieved. Mating or registering are suggested nowhere in the prior art. Therefore, it does not show how to approach the results this inventor achieved. No prior art suggests expressly or by implication keeping the print off the substrate and providing a "sculptured" embroidery in a pattern to mate and register with the print.

Although British teaches transfer printing on lace, this patent does not envision the use of a pattern inserted between the transfer print and the lace substrate that would "mate" with the transfer print. Of course the lace substrate itself has an inherent pattern, but British makes no mention of it and does not even hint at mating the transfer print with this pattern. Without some express or implied suggestion, we cannot assume that one of ordinary skill in the art would have found it obvious to mate the transfer print with this pattern. More to the point, the inherent pattern in lace cannot be inserted between the lace substrate and the transfer print because the pattern is part and parcel of the substrate. Even though lace can be "re-embroidered," as Butterick teaches, the embroidery on re-embroidered lace does not initiate a pattern, but merely outlines the pattern of the lace itself; the single colored embroidery described in the first steps of appellant's claimed method, on the other hand, exhibits a pattern of its own designed to mate with the transfer print, and keeps the print off the substrate.

The conclusion is the same under test (b) as it is under test (a). Under test (b), the person who considered merely combining the teachings of prior art references would not expect from the references or any implication to be drawn therefrom that the great advance made by appellant's invention could be at-

tained. The board never showed how the teachings of the prior art could be combined to make the invention.

In re Sheckler, *supra*, may be taken as an example of a case where a combination of the teachings of prior art references suggested the inventor's result. The invention was for a building block for wall construction comprising a sandwich whose exterior portion were slabs of solid concrete and the interior, bonded to the slabs, was rigid light cellular heat insulating organic foam material. One prior art reference disclosed a reinforced concrete beam with an inner core of foamed polymeric material. Another disclosed a building block consisting of two layers of load-bearing glass separated by an interior layer of heat-insulating foamed glass material.

[4] It could not have placed any great strain on the intellect of the court to sustain the board's conclusion of obviousness. The court said, and we agree, it was not necessary that the prior art suggest expressly or in so many words, the "changes or possible improvements" the inventor made. It was only necessary that he apply "*knowledge clearly present in the prior art.*" Sheckler, 438 F.2d at 1001, 168 USPQ at 717. (Emphasis supplied.)

If this last test is not met, the invention claimed would not have been obvious from the references.

[5] In re Imperato, *supra*, may be taken as an example of a case when combination of the teachings of prior art references did not suggest the inventor's result. The court therefore reversed the board's holding of obviousness. The invention related to an improvement in the process of "beneficiating" low grade ore to prepare it for the blast furnace. Beneficiation requires grinding the ore to a finely divided state in order to facilitate the removal of impurities. Then, however, it must be recombined into lumps for the furnace. The prior art used various carbonates for bonding to which the inventor added free sulphur. Other prior art taught use of free sulphur only for bonding. The board thought it obvious to combine the two. The court, however, noted that combining both carbonates and sulphur achieved an unexpected result. Both prior processes resulted in lump ore having high strength at low temperatures, but not at high temperatures, whereas the combination obtained a lump ore having high strength in both situations, an unexpected and unobvious result. The lesson of this case appears to be that prior art references in combination do not make an invention obvious unless something in the prior art references would suggest the advantage to be derived from combining their teachings. It does not appear from

the opinion that the inventor actually did anything not disclosed somewhere in the prior art references, and in that regard the case was less favorable for unobviousness than the case at bar, where none of the prior art references disclosed an embroidery inserted between the print and the substrate, "registered" or mated the print with the embroidery, not the substrate, and transferred the print to the insert, not to the substrate.

For the foregoing reasons, it is clear that the principal rejection of claims 1, 4-6, and 9-11 cannot be sustained. The four references relied upon by the board for this rejection (British, Miles, Vellins, and Butterick), either separately or in combination, do not suggest that transfer printing techniques should be combined with embroidery techniques in the specific manner claimed in appellant's application. In view of all the art of record, we also hold that the secondary rejection of claims 2, 3, and 8 must be reversed. While Cox, Haigh, and Sernaker disclose various aspects about the making of embroidered emblems, none of them disclose or suggest transfer printing; they do not envision using transfer printing to create the effect of embroidery with different colored threads. Rather, they suggest using standard embroidery techniques, such as hand looming or embroidery with the Schiffli machine alone, to create the embroidered pattern. In the absence of any suggestion to use teachings concerning transfer printing in the making of embroidered emblems, we conclude that appellant's claimed invention would not have been obvious to one of ordinary skill in the art from the above seven references at the time of the invention.

B. Whether the board correctly disregarded the secondary considerations.

[6,7] Finally, we hold that the "secondary considerations" that the Supreme Court stated might be of possible utility in an obviousness determination, *Graham v. John Deere Co.*, 383 U.S. 1, 17-18, 148 USPQ 459, 466-467 (1966), also require a finding of nonobviousness if the matter be otherwise doubtful. In an appeal of a rejection of a patent application, secondary considerations, such as commercial success, typically do not play a large part in the analysis of obviousness because the inventor usually waits until his patent issues before he swings production into full gear. Thus, a detailed analysis of secondary considerations is more common in cases like *John Deere*, which involved infringement. If, however, a patent applicant properly presents evidence relating to these secondary considerations, the board must al-

ways consider such evidence in connection with the determination of obviousness. In *re Fielder and Underwood*, 471 F.2d 640, 644, 176 USPQ 300, 303 (CCPA 1973).

[8] Appellant presented a considerable amount of such evidence. Despite the fact that a patent has not yet issued, appellant has been able to license his invention. Appellant's licensees have sold millions of the emblems, and the Gilardone affidavit attests that appellant's invention has met with great commercial success, has helped revitalize a depressed embroidery industry, and has introduced a new kind of emblem into the marketplace. The DeVries affidavit also attests to the uniqueness of appellant's invention. In addition, the record clearly shows that appellant's multicolored, embroidered emblems are considerably cheaper to produce than the prior art embroidered emblems. It is true the prior art references relied on to establish obviousness had not been available to the inventor very long. Things apparently were moving fast in that industry. This might justify the thought that the want filled by the invention had not been felt very long, but it does not justify wholly ignoring these secondary considerations which here speak with unusual eloquence.

[9,10] In the face of all this evidence, the board was silent. Although the two affidavits in the record before us were submitted after the examiner's decision became final, they were submitted before the board reached its decision. While appellant presented the DeVries affidavit to the examiner after his final action, 37 C.F.R. §1.116(b) (1982) would allow the examiner to admit this evidence upon a showing of good cause. Under 37 C.F.R. §1.195 (1982), the board had the power to admit the later Gilardone affidavit upon a similar showing. The record before us, however, is unclear whether the examiner did, in fact, admit the DeVries affidavit, and whether the board admitted the Gilardone affidavit; neither the examiner nor the board mentioned these affidavits. In response to our specific question in oral argument, however, the solicitor admitted that the "commercial success" affidavits were before the board. In addition, the solicitor cited in his brief the telling Gilardone affidavit and assured us that the board did consider evidence of commercial success. He stated:

The argument (Br-15), that the Board of Appeals failed to consider the evidence of commercial success, is untenable. The Board specifically stated that they found the embroidered emblems "extremely attractive" (R-76). This appears to be a recognition that the emblems would be well-received commercially. Appellant's af-

affidavit (R-64) [the Gilardone affidavit] shows only that the emblems have had good sales. There is no comparison with the sales of other embroidered emblems.

[11] As we stated above, the Gilardone affidavit shows much more than "good sales." In addition, we reject the notion that the board's bare compliment of the emblems as "extremely attractive" implies assignment of weight to appellant's commercial success evidence. To accept this notion would shrink the meaning of the phrase "secondary considerations" beyond belief. The board in fact said nothing about the commercial success of appellant's invention, and nothing about any of the other considerations the Supreme Court deemed relevant. Although the solicitor assures us that the board did consider the evidence before us relating to secondary considerations, we do not agree with his analysis of this evidence, nor do we find any support for this analysis in the board's opinion.

The solicitor in effect has stipulated that the board considered the evidence, which necessarily implies that it allowed the filing of it on a showing of good cause, as to which there is no other evidence in the record. In view of this stipulation, it appears it would be inappropriate to remand the case for the board to consider the same evidence a second time. We can only conclude that for some unexplained and, to us, unfathomable reason, the board found it insufficient to overcome the, to it, plain indications of obviousness.

For the reasons stated in this opinion, the decision of the board is reversed.

Reversed.

Graham v. John Deere Co., 383 U.S. 1, 17-18, 148 USPQ 459, 466-467 (1966), that type of success is a relevant factor, and in this close case I think it decisive in showing nonobviousness.

Davis, Circuit Judge, concurring in part and concurring in the result.

I join in Parts I and II B of Judge Nichols' opinion. As for Part II A, my judicial microscope suggests to me that, if the prior art is considered alone, the case is much closer than his opinion indicates. Differences there are, of course, between appellant's invention and the prior art, but it is not plain to me, from the bare references alone (especially those disclosing or suggesting transfer printing on lace and other rough-textured or somewhat "sculptured" material), that the invention was not obvious from the prior art. I need not, however, decide that unclear question on the references alone. For me the crucial insight is the "secondary consideration" of commercial success which (as Part II B of the main opinion spells out) appellant has fully proved, the Solicitor has not sought to rebut and has admitted was before the Board, and the Board failed properly to consider. Under

Court of Appeals, Federal Circuit

Issue

In re Deminski

No. 85-2267

Decided July 8, 1986

PATENTS

1. Patentability — In general (§51.01)

References of compressors and pumps are within field of inventor's endeavor of horizontally reciprocating, double acting piston devices for moving fluids.

2. Invention — Specific cases — Mechanical (§51.5095)

Claims containing limitation that valve sets in each valve chamber be connected in manner permitting them to be withdrawn as unit were improperly rejected, as there is nothing in prior art references to suggest desirability and thus obviousness of designing valve assembly so that it can be removed as unit.

Appeal from Patent and Trademark Office, Board of Patent Appeals and Interferences.

Application for patent of Richard M. Deminski, application Serial No. 177,863, for a High Pressure Gas Transmission Compressor. From affirmation of examiner's rejection of claims 1-3, 6, 7, 17, 18, and 21; applicant appeals. Affirmed in part and reversed in part.

David E. Schmit and Frost & Jacobs, both of Cincinnati, Ohio (Timothy J. O'Hearn, on the brief) for appellant.

John C. Martin, Associate Solicitor (Joseph F. Nakamura, Solicitor and Fred E. McKelvey, Deputy Solicitor) for Patent and Trademark Office.

Before Baldwin, Smith, and Newman, Circuit Judges.

Smith, Circuit Judge.

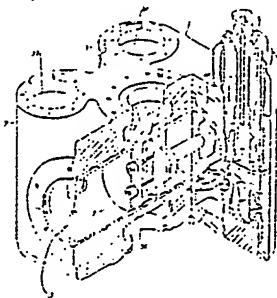
This is an appeal by Richard M. Deminski (Deminski) from the February 25, 1985, decision of the Patent and Trademark Office Board of Patent Appeals and Interferences (board), in which the board affirmed the examiner's final rejection, under 35 U.S.C. § 103, of certain claims in Deminski's utility patent application, serial No. 177,863, relating to a high pressure gas transmission compressor. We affirm in part and reverse in part.

The issue is whether the board erred in affirming the examiner's rejection of claims 1-3, 6, 7, 17, 18, and 21 of the Deminski patent application, under 35 U.S.C. § 103, as unpatentable over the prior art. We affirm the rejection of claims 1-3, 6, and 7. We reverse the rejection of claims 17, 18, and 21.

Deminski's Invention

Deminski's invention "relates generally to double-acting high pressure gas transmission compressors," such as those used "for transmitting natural gas and other compressible fluids through pipe lines." More particularly, the invention is directed to a horizontally reciprocating, double-acting piston type gas compressor in which the valves can be removed easily for replacement.

The embodiment of Deminski's invention (Fig. 1) includes a block-like compressor housing (2) with a horizontal cylinder (3) which extends longitudinally through the housing and a double-acting piston (9) carrying piston rings (14). There are four openings (30) in the cylinder, with passageways (38) to four vertically disposed cylindrical valve chambers (32), which chambers are located at the four corners of the compressor housing (2). A suction valve (50), a discharge valve (40), and a baffle between the valves form a valve assembly which may be withdrawn as a unit from valve chamber (32).



Claims on Appeal

Claims 1, 3, 6, 7, 17, 18, and 21 were rejected under 35 U.S.C. § 103 as unpatentable over Pocock U.S. Patent No. 1,226,693 in view of British Patent No. 1,332,774 and Shallenberg U.S. Patent No. 1,976,464. Briefly, the examiner and the board stated that it would have been obvious in view of the British

reference to add two more valve chambers to Pocock, and in view of Shallenberg to move the cylinder upwardly so that it is above the bottom of the valve chambers.

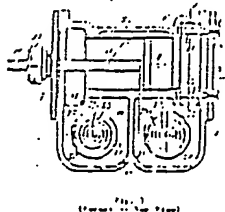
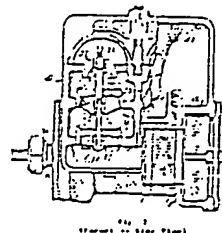
Claim 2 was rejected under 35 U.S.C. § 103 as unpatentable over Pocock in view of the British reference and Shallenberg, and further in view of Kovach which teaches the use of a piston ring in a double-acting piston pump.

Prior Art Relied Upon by the Board

A. Pocock.

Pocock's U.S. Patent No. 1,226,693 teaches a double-acting piston pump. the pump is typically small and is used to pump water out of underground mines.

A significant feature of Pocock is that the valve stem (27) (Figs. 2, 3) is easily removable because it is not rigidly connected to the valves or the valve seats. After the valve stem is removed, the valve pieces can be removed either by turning the pump upside down or by withdrawing the pieces one at a time with tools or by hand.



Pocock shows two valve housings (14) located along the same side of the pump cylinder. The valve housings are vertically oriented, so that the valves can be removed vertically through the top of the housing. The Pocock structure does not allow for removal of the valve assembly as a unit.

B. British Patent.

The British Patent No. 1,332,774 is directed to a double-acting piston compressor with a horizontal cylinder (2), such as a high capacity piston compressor for use with gas pipelines (Fig. 4). The British patent shows four hori-

zontal valve chambers. Two of the valve chambers are located above the cylinder and two of the chambers are located below the cylinder. Each valve chamber is perpendicular to the cylinder.

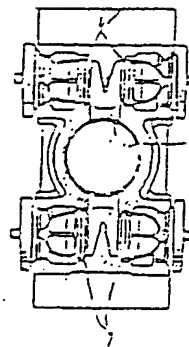


Fig. 4
(British Patent)

C. Shallenberg.

Shallenberg, U.S. Patent No. 1,976,464, teaches a double-acting piston pump with a particular valve construction. The structure includes two distinct and separate valve chambers situated above the cylinder (Fig. 5). Each valve chamber contains two valves of the same type (i.e., either two suction valves or two discharge valves). The disclosure indicates that two of the four valves could be placed below the cylinder and two above the cylinder but that the inventor believes it preferable to arrange them all above the cylinder because "that enables more ready installation and removal of the valves."

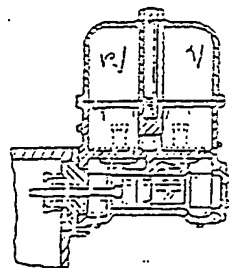


Fig. 5
(Shallenberg)

D. Kovach.

Kovach, U.S. Patent No. 1,946,166, discloses a particular valve construction for a reciprocating piston air pump. The only feature relied on by the examiner and by the board is that the piston is provided with piston rings as a seal.

Obviousness

A. Prior Art and Ordinary Skill in the Art.

[1] Deminski argues that the references applied by the examiner and by the board "are not properly contained within the scope of the [relevant] prior art," i.e., they are "nonanalogous." Deminski contends that none of the references should be considered as prior art because none is directed to the problem of removing worn or damaged valves from compressors. In Deminski's view, the examiner and the board defined the problem too broadly by including both compressors and pumps in the prior art.

Deminski cites *Stratoflex, Inc. v. Aeroquip Corp.*, in which this court stated that "[t]he scope of the prior art has been defined as that 'reasonably pertinent to the particular problem with which the inventor was involved.'"¹ The question in *Stratoflex* was whether rubber hose should be considered as prior art relevant to the claimed PTFE tubing. In finding that rubber hose was prior art, the court focused on only the second step of the two-step test for nonanalogous art which test had been stated in *Wood* in the following terms:²

The determination that a reference is from a nonanalogous art is therefore two-fold. First, we decide if the reference is within the field of the inventor's endeavor. If it is not, we proceed to determine whether the reference is reasonably pertinent to the particular problem with which the inventor was involved.

Here, the references satisfy the first inquiry because they are "within the field of the inventor's endeavor" of horizontally reciprocating, double-acting piston devices for moving fluids. We agree with the board that the cited pumps and compressors have essentially the same function and structure: they move fluids by means of a double-acting piston, a cylinder, and valves.³ Consequently, the field of endeavor is the same for an inventor of either a pump or a compressor of the double-acting

piston type.⁴ Thus, the Pocock "pump" was correctly considered as prior art for the Deminski "compressor." It is even more clear that the British and Kovach references are within Deminski's field of endeavor because they are directed to compressors having horizontally reciprocating, double-acting pistons.

B. Whether Deminski's Invention Would Have Been Obvious.

We affirm the board's decision insofar as it affirms the examiner's rejection of claims 1, 3, 6, and 7 under 35 U.S.C. § 103 as unpatentable over Pocock in view of the British Patent No. 1,322,774 and Shallenberg. The examiner and the board correctly found that it would have been obvious in view of the British reference to add two more valve chambers to Pocock and in view of Shallenberg to move the cylinder upwardly so that it is above the bottom of the valve chambers.

We also affirm the rejection of claim 2 under 35 U.S.C. § 103 as unpatentable over Pocock in view of the British reference, Shallenberg, and further in view of Kovach, which teaches the use of a piston ring in a double-acting piston pump.

[2] We reverse the board's decision insofar as it affirms the examiner's rejection of claims 17, 18, and 21. The latter claims have the limitation that the valve sets in each valve chamber be connected in a way which will permit them to be withdrawn as a unit. There is nothing in the prior art references, either singly or in combination, "to suggest the desirability, and thus the obviousness," of designing the valve assembly so that it can be removed as a unit.⁵

Simply put, Deminski solved the problem of how to remove the valve assembly by designing a compressor with four vertically oriented valve chambers. Each chamber contains a valve assembly which can be removed as a unit through the opening at the top of the valve chamber. Each of the four valve assembly units may be removed relatively easily by lifting vertically with a hoist.

¹ *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 1535, 218 USPQ 871, 876 (Fed. Cir. 1983) (quoting in turn from *In re Wood*, 599 F.2d 1032, 1036, 202 USPQ 171, 174 (CCPA 1979)).

² *Wood*, 599 F.2d at 1036, 202 USPQ at 174.

³ See *In re Ellis*, 476 F.2d 1370, 1372, 177 USPQ 526, 527 (CCPA 1973) (cross-reference in official search notes is some evidence of analogy, although "the similarities and differences in structure and function of the inventions disclosed in the references . . . carry far greater weight"). The nearly identical classifications of the application and references in the present case are the result of the close similarity in structure and function of the invention and the prior art.

⁴ Deminski argues at length that the scope of his claims is limited by the language "a high-pressure gas transmission compressor." We need not decide whether the preamble is limiting in this case because the prior art would be the same for either pumps or compressors of the double-acting piston type. We acknowledge, however, that the prior art did not address Deminski's problem of how to remove a large and heavy valve assembly as a unit.

⁵ *Fromson v. Advance Offset Plate, Inc.*, 755 F.2d 1549, 1556, 225 USPQ 26, 31 (Fed. Cir. 1985) (quoting *Lindemann Maschinenfabrik GMBH v. American Hoist & Derrick Co.*, 730 F.2d 1452, 1462, 221 USPQ 481, 488 (Fed. Cir. 1984)) (emphasis added in *Fromson*).

Pocock teaches a pump in which only the valve *stem* is separately removable and replaceable. The Pocock structure requires the valve pieces to be removed item-by-item, by turning the pump upside down, by using a tool, or by hand. Because the Pocock structure is typically small, Pocock does not address Deminski's problem of how to remove a large and heavy valve assembly *as a unit*. Instead, Pocock teaches away from the invention of claims 17, 18, and 21 of Deminski's patent application.

There was no suggestion in the prior art to provide Deminski with the motivation to design the valve assembly so that it would be removable as a unit. The board argues that if Pocock had followed the "common practice" of attaching the valve stem to the valve structure, then the valve assembly would be removable as a unit. The only way the board could have arrived at its conclusion was through hindsight analysis by reading into the art Deminski's own teachings. Hindsight analysis is clearly improper, since the statutory test is whether "the subject matter as a whole would have been obvious at the time the invention was made."

Conclusion

We affirm the board's decision insofar as it affirmed the examiner's rejection of claims 1-3, 6, and 7 in Deminski's patent application. We reverse the board's decision insofar as it affirmed the examiner's rejection of claims 17, 18, and 21 as unpatentable over the prior art under 35 U.S.C. § 103.

AFFIRMED IN PART, REVERSED IN PART
